

What is Claimed is:

1. A projection system for projecting an image comprising a matrix of light pixels having modulated luminance, the projection system comprising:

a first imager configured to modulate a light band on a pixel-by-pixel basis

5 proportional to gray scale values provided for each pixel of the image to provide a first output matrix; and

a second imager positioned and configured to receive the first output matrix of modulated pixels of light and modulate the individual modulated pixels of light from said first imager on a pixel-by-pixel basis proportional to a second gray scale value provided for each
10 pixel of said image.

2. The projection system of claim 1 wherein at least one of said first imager and said second imager is a LCOS imager.

3. The projection system of claim 2 wherein both of said first imager and said second imager are LCOS imagers.

15 4. The projection system of claim 3 wherein said first imager and said second imager differ in size.

5. The projection system of claim 3 wherein said first imager and said second imager allow different levels of leakage.

20 6. The projection system of claim 1 wherein at least one of said imagers is a DLP imager.

7. The projection system of claim 2, further comprising at least one polarizing beam splitter for providing polarized light to said LCOS imager.

8. The projection system of claim 1, further comprising a relay lens system for directing modulated light output from each pixel of said first imager to a corresponding pixel
25 of said second imager.

9. The projection system of claim 8 further comprising a projection lens assembly for projecting modulated light from said second imager onto a display screen.

10. The projection system of claim 8 wherein the relay lens system is symmetrical.

11. An image projection system comprising a first imager and a second imager,
5 each of said first and second imagers comprising a corresponding matrix of pixels configured to provide a light output modulated proportional to a gray scale value provided for that pixel, said projection system being configured such that a modulated output from a particular pixel of said first imager is projected onto a corresponding pixel of said second imager; whereby the light output of a particular pixel of said second imager is proportional to both the gray scale
10 value provided for that pixel and the gray scale value provided for the corresponding pixel of said first imager.

12. The image projection system of claim 11, wherein at least one of said first imager and said second imager is a liquid crystal on silicon light engine.

13. The image projection system of claim 11, further comprising a relay lens
15 system for directing light output from the particular pixel of said first imager onto the corresponding pixel of said second imager.

14. A light projection system comprising:

a first imager having an array of pixels, each pixel providing a modulated light output of intensity proportional to a selected gray scale value for that pixel;

20 a second imager having an array of pixels corresponding to said array of pixels in said first imager, each pixel providing a light output of intensity proportional to a modulated light output of a corresponding pixel in said first imager and a selected gray scale value for that pixel; and

a relay lens system directing modulated light output from each pixel of said first
25 imager to a corresponding pixel of said second imager.

15. The light projection system of claim 14 wherein at least one of said first imager and said second imager is a liquid crystal on silicon reflective light engine.

16. The light projection system of claim 14 wherein at least one of said first imager and said second imager is a digital light pulse imager.

5 17. The light projection system of claim 14 further comprising a projection lens assembly projecting modulated light from said second imager onto a display screen.

18. The light projection system of claim 14 wherein the relay lens system is symmetrical.

10 19. The light projection system of claim 14 wherein said first imager and said second imager are equivalent.

20. A two-stage projection system comprising:
a first stage having one or more imagers for modulating light on a pixel- by-pixel basis;
a second stage having one or more imagers for modulating light on a pixel- by-pixel basis; and

15 a relay lens system projecting the output of the pixels of the first stage imagers onto corresponding pixels of the second stage imagers.

21. The two-stage imager of claim 20 wherein the first stage comprises three imagers for modulating red, blue, and green light, respectively and an architecture configured
20 to direct light of the desired color to each imager.

22. The two-stage imager of claim 21 wherein the second stage comprises three imagers for modulating red, blue, and green light, respectively and an architecture configured to direct light of the desired color to each imager.

23. The two-stage imager of claim 22 further comprising a half-wave plate
25 disposed between the first stage and the second stage.

24 The two-stage imager of claim 23 wherein the half-wave plate is disposed at the system stop of the relay lens system.

25. The two-stage imager of claim 20 wherein the relay lens system ensquares at least about 50 percent of the energy from a particular pixel of a first stage imager onto the
5 corresponding pixel of a second stage imager.

26. The two-stage imager of claim 20 wherein the relay lens system provides a distortion due to field curvature of less than about 0.5 percent.